



STIC Search Report

EIC 1700

STIC Database Tracking Number: 216092

TO: Rip A Lee
Location: Remsen 10a21
Art Unit : 1713
February 26, 2007
Phone: 571-272-1104
Serial Number: 10 / 537677

From: Jan Delaval
Location: EIC 1700
Remsen 4a30
Phone: 571-272-2504
jan.delaval@uspto.gov

Search Notes

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: LEE, RYO A. Examiner #: 73680 Date: FEB 21, 2002
 Art Unit: 1713 Phone Number 2-1104 Serial Number: 10/537,677
 Mail Box and Bldg/Room Location: REM 10A21 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: DIGLYNDIMETALLIC TRANSITION METAL COMPOUND ...

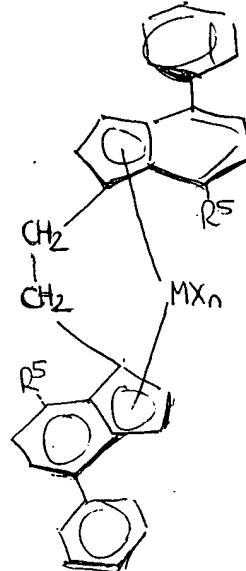
Inventors (please provide full names): SCHULTE, J. OKUMURA, Y.
SCHEITER, J. (see attached Bibliography)

Earliest Priority Filing Date: DEC-06, 2002

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for the following compound, MX_n

ethylene bis((7-methyl-4-phenyl)indenyl)zirconium dichloride
ethoxydiyl bis((7-methyl-4-phenyl)indenyl)zirconium dichloride



R⁵ ≠ H

SCIENTIFIC REFERENCE BR
 Sci & Tech Inf. Ctr

FEB 21 REC'D

Pat. & T.M. Office

STAFF USE ONLY		Type of Search	Vendors and cost where applicable
Searcher:	<u>John</u>	NA Sequence (#)	STN <input checked="" type="checkbox"/>
Searcher Phone #:	<u>522504</u>	AA Sequence (#)	Dialog _____
Searcher Location:		Structure (#)	Questel/Orbit <input checked="" type="checkbox"/>
Date Searcher Picked Up:	<u>2/26/07</u>	Bibliographic	Dr. Link _____
Date Completed:	<u>2/26/07</u>	Litigation	Lexis/Nexis _____
Searcher Prep & Review Time:		Fulltext	Sequence Systems _____
Clerical Prep Time:	<u>20</u>	Patent Family	WWW/Internet _____
Online Time:	<u>+ 50</u>	Other	Other (specify) _____

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DICTIONARY FILE UPDATES: 25 FEB 2007 HIGHEST RN 923060-60-0

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<http://www.cas.org/ONLINE/UG/regprops.html>

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L48 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2007 ACS on STN
RN 710280-69-6 REGISTRY
ED Entered STN: 15 Jul 2004
CN Zirconium, dichloro[1,2-ethanediylbis[(1,2,3,3a,7a-η)-7-[4-(1,1-
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NAME)
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CI CCS
SR CA
LC STN Files: CA, CAPLUS

lee - 10 / 537677

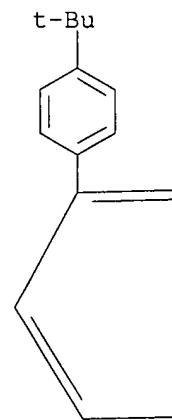
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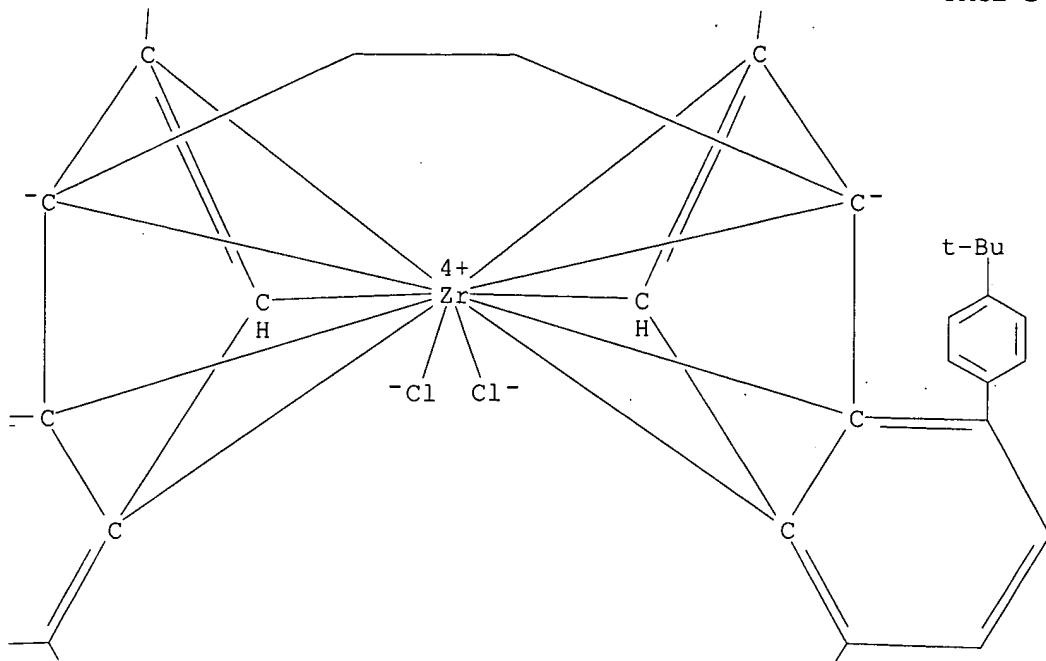
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jan delaval - 26 february 2007

PAGE 2-B



PAGE 3-B

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1 REFERENCES IN FILE CA (1907 TO DATE)
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 141:72039

L48 ANSWER 2 OF 2 REGISTRY COPYRIGHT 2007 ACS on STN
 RN 709675-31-0 REGISTRY
 ED Entered STN: 14 Jul 2004
 CN Zirconium, dichloro[1,2-ethanediylbis[(1,2,3,3a,7a-η)-4-[4-(1,1-dimethylethyl)phenyl]-2,7-dimethyl-1H-inden-1-ylidene]]- (9CI) (CA INDEX NAME)
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 LC STN Files: CA, CAPLUS, USPATFULL

lee - 10 / 537677

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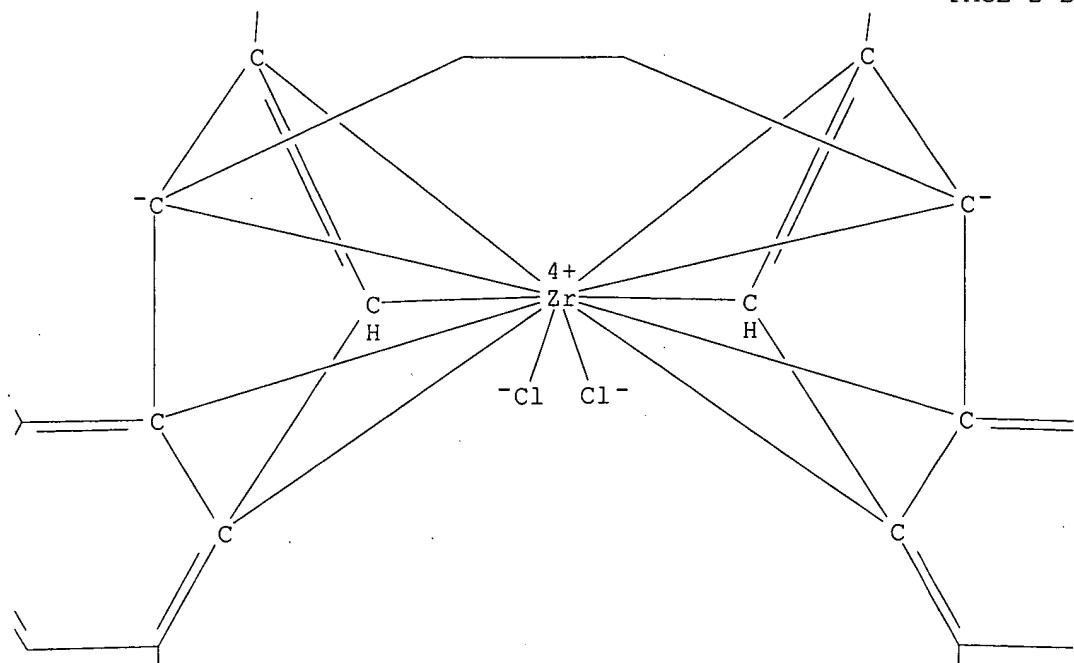
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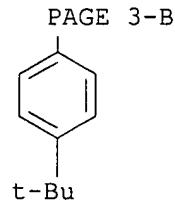
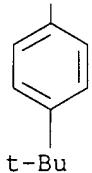
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PAGE 2-C





PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

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REFERENCE 1: 141:72034

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FILE COVERS 1971 TO PATENT PUBLICATION DATE: 22 Feb 2007 (20070222/PD)
 FILE LAST UPDATED: 22 Feb 2007 (20070222/ED)
 HIGHEST GRANTED PATENT NUMBER: US7181769
 HIGHEST APPLICATION PUBLICATION NUMBER: US2007044192
 CA INDEXING IS CURRENT THROUGH 22 Feb 2007 (20070222/UPCA)
 ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 22 Feb 2007 (20070222/PD)
 REVISED CLASS FIELDS (/NCL) LAST RELOADED: Aug 2006
 USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Aug 2006

=> d bib abs hitstr

L66 ANSWER 1 OF 1 USPATFULL on STN
 AN 2006:144826 USPATFULL
 TI Organometallic transition metal compound, biscyclopentadienyl ligand
 system, catalyst system and process for preparing polyolefins
 IN Schulte, Jorg, Frankfurt, GERMANY, FEDERAL REPUBLIC OF
 Schottek, Jorg, Frankfurt, GERMANY, FEDERAL REPUBLIC OF
 Okumura, Yoshikuni, Kanagawa, JAPAN
 PA Bassell Polyolefine GmbH, Frankfurt Am Main, GERMANY, FEDERAL REPUBLIC
 OF, 65926 (non-U.S. corporation)
 PI US 2006122345 A1 20060608
 AI US 2003-537677 A1 20031202 (10)
 WO 2003-EP13553 20031202
 20050606 PCT 371 date
 PRAI DE 2002-10257332 20021206
 US 2003-444595P 20030203 (60)
 DT Utility
 FS APPLICATION
 LREP CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207, WILMINGTON, DE, 19899, US
 CLMN Number of Claims: 12
 ECL Exemplary Claim: 1
 DRWN No Drawings
 LN.CNT 1415
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.
 AB The present invention relates to organometallic transition metal
 compounds of formula (I) where M.sup.1 is an element of group 3, 4, 5 or

6 of the Periodic Table of the Elements or the lanthanides, X are identical or different and are each halogen, hydrogen, C._{sub.1-C.sub.20}-alkyl, C._{sub.2-C.sub.20}-alkenyl, C._{sub.6-C.sub.22}-aryl, alkylaryl or arylalkyl each having from 1 to 10 carbon atoms in the alkyl part and from 6 to 22 carbon atoms in the aryl part, --OR.⁶ or --NR.⁶R.⁷, where two radicals X may also be joined to one another, n is a natural number from 1 to 4 which corresponds to the oxidation number of M.¹ minus 2, R.¹ is hydrogen or a C._{sub.1-C.sub.40} radical, R.² is a substituted or unsubstituted C._{sub.6-C.sub.40}-aryl radical or C._{sub.2-C.sub.40}-heteroaromatic radical containing at least one heteroatom selected from the group consisting of O, N, S and P, R.³ is hydrogen or a C._{sub.1-C.sub.40} radical, or the radicals R.² and R.³ together form a ring system, R.⁴ is hydrogen or a C._{sub.1-C.sub.40} radical, R.⁵ is a C._{sub.1-C.sub.40} radical, and Z is a divalent group CR.⁸R.⁹--CR.¹⁰R.¹¹, where R.⁸, R.⁹, R.¹⁰ and R.¹¹ are identical or different and are each hydrogen or a C._{sub.1-C.sub.40} radical, biscyclopentadienyl ligand systems having such a substitution pattern, catalyst systems comprising at least one of the organometallic transition metal compounds of the present invention, a process for preparing polyolefins by polymerization or copolymerization of at least one olefin in the presence of one of the catalyst systems of the present invention and the use of the biscyclopentadienyl ligand systems of the present invention for preparing organometallic transition metal compounds. ##STR1##

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

IT 709675-31-0P

(metallocene catalysts for propylene polymerization)

RN 709675-31-0 USPATFULL

CN Zirconium, dichloro[1,2-ethanediylbis[(1,2,3,3a,7a-η)-4-[4-(1,1-dimethylethyl)phenyl]-2,7-dimethyl-1H-inden-1-ylidene]]- (9CI) (CA INDEX NAME)

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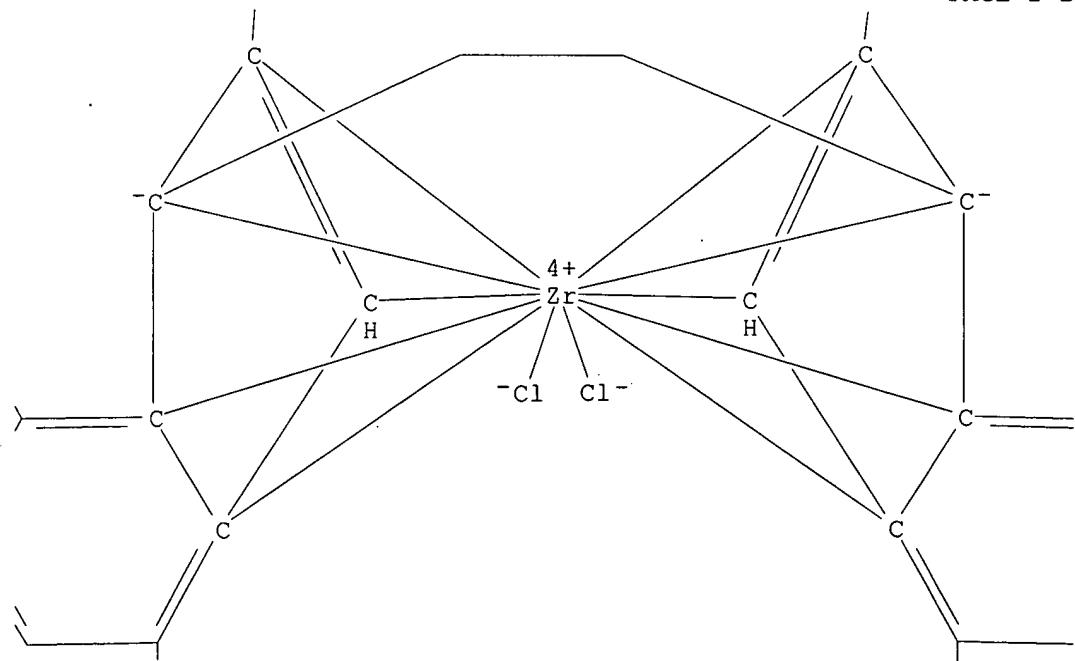
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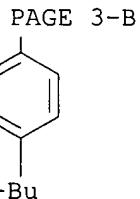
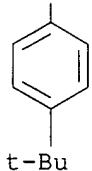
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PAGE 2-B



PAGE 2-C



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 FILE LAST UPDATED: 25 Feb 2007 (20070225/ED)

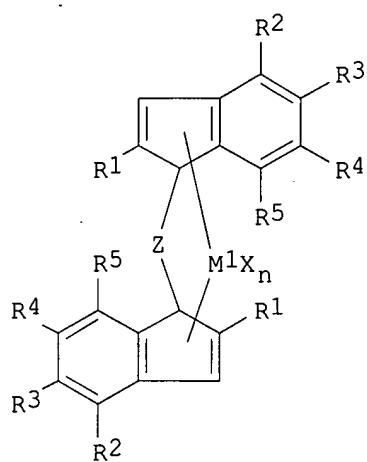
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This file contains CAS Registry Numbers for easy and accurate substance identification.

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L65 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2004:515558 HCAPLUS
 DN 141:72039
 TI Organometallic transition metal compound, biscyclopentadienyl ligand, catalyst system, and preparing polyolefins
 IN Schulte, Joerg; Schottek, Joerg; Okumura, Yoshikuni
 PA Basell Polyolefine GmbH, Germany
 SO PCT Int. Appl., 42 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 2

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OS	MARPAT	141:72039			
GI					



AB The organometallic transition metal compds. have formula I, where M1 = Group 3, 4, 5 or 6 element or the lanthanides, X = halogen, H, C1-20-alkyl, C2-C20-alkenyl, C6-C22-aryl, alkylaryl or arylalkyl each having 1-10 C atoms in the alkyl part and 6-22 C atoms in the aryl part, OR6 or NR6R7, where 2 radicals X may also be joined to each other, n = 1-4 which corresponds to the oxidation number of M1 minus 2, R1 = H or a C1-C40 radical, R2 = substituted or unsubstituted C6-C40-aryl radical or C2-C40-heteroarom. radical containing ≥ 1 heteroatom selected from O, N, S and P, R3 = H or a C1-C40 radical, or the radicals R2 and R3 together form a ring system, R4 = H or a C1-C40 radical, R5 = C1-C40 radical, and Z = divalent group CR8R9-CR10R11, where R8-11 = H or a C1-C40 radical. C3H6 was polymerized in the presence of MAO, AlEt₃, SiO₂-supported 1,2-ethanediylbis[2,7-dimethyl-4-(4'-tert-butylphenyl)indenyl]zirconium dichloride (preparation given) for 1 h at 65° to give isotactic polypropylene having m.p. 156.4°.

IT 710280-69-6P
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)
 (silica supported; transition metal biscyclopentadienyl complex for
 manufacture of stereoregular polypropylene)

RN 710280-69-6 HCAPLUS

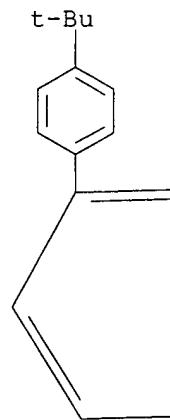
CN Zirconium, dichloro[1,2-ethanediylbis[(1,2,3,3a,7a- η)-7-[4-(1,1-dimethylethyl)phenyl]-2,4-dimethyl-1H-inden-1-ylidene]]- (9CI) (CA INDEX NAME)

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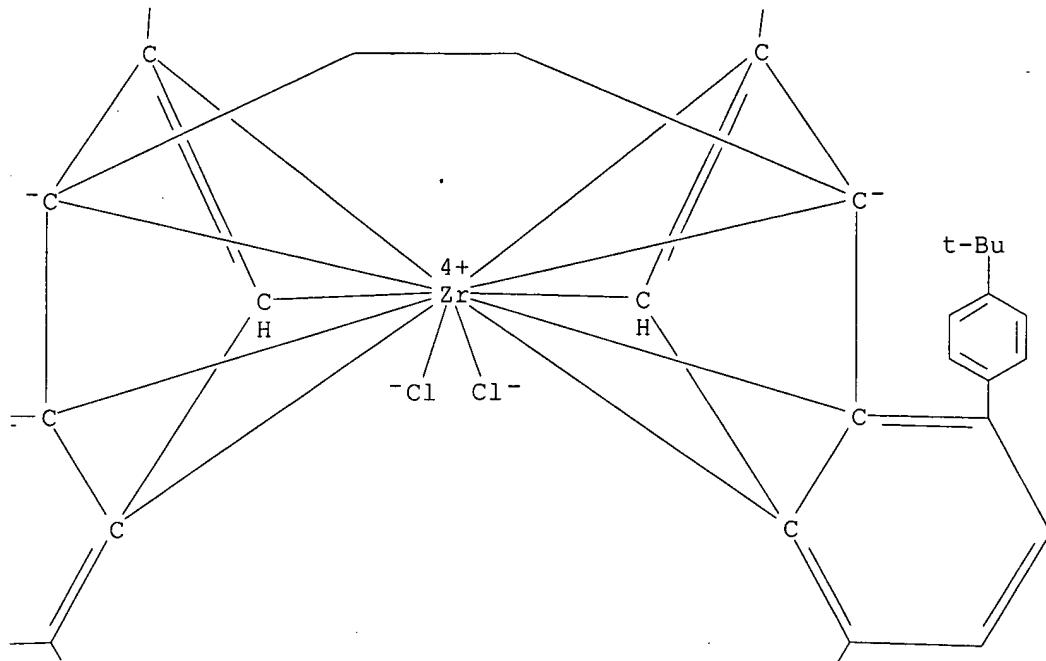
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PAGE 2-B



PAGE 3-B

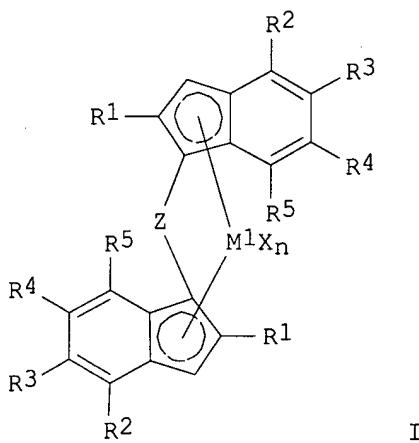
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L65 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2004:509967 HCAPLUS
 DN 141:72034
 TI Organometallic complexes of transition metals as catalysts for olefin polymerization
 IN Schulte, Joerg; Schottek, Joerg; Okumura, Yoshikuni
 PA Basell Polyolefine GmbH, Germany
 SO Ger. Offen., 19 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 FAN.CNT 2

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 WO 2003-EP13553 W 20031202 <--
 OS MARPAT 141:72034
 GI



AB Organotransition metal complexes of the formula I have very high activity for propylene polymerization when activated with MAO, where M1 = a transition metal of Groups 3-6 or a lanthanide metal, X = halogen, H, C1-20 alkyl, C2-20 alkenyl, C6-22 aryl or alkylaryl or arylalkyl with 1-10 carbon atoms in the alkyl residue and 6-22 carbon atoms in the aryl residue, alkyloxy or amino groups, n = 1-4, R1 = H or C1-40 hydrocarbon residue, R2 = substituted or unsubstituted C6-40 aryl residue or C2-40 heteroarom. residue having O, N, S or P heteroatoms, R3 = H or C1-40 hydrocarbon residue, or R2 and R3 form a ring system, R4 = H or C1-40 hydrocarbon residue, R5 = C1-40 hydrocarbon residue, and Z = a bridging group CR8R9CR10R11 where R8-R11 is H or a C1-40 hydrocarbon residue. Thus, propylene was homopolymerized in the presence of MAO, AlEt₃, SiO₂-supported 1,2-Ethanediylbis(2,7-dimethyl-4-(4'-tert-butylphenyl)indenyl)zirconium dichloride (preparation given) for 1 h at 65° to give polypropylene having m.p. 156.4°, M_w/M_n 3.0 and activity 0.82 kg PP/g·h.

IT 709675-31-0P

RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)

(metallocene catalysts for propylene polymerization)

RN 709675-31-0 HCAPLUS

CN Zirconium, dichloro[1,2-ethanediylbis[(1,2,3,3a,7a-η)-4-{4-(1,1-dimethylethyl)phenyl}-2,7-dimethyl-1H-inden-1-ylidene]]- (9CI) (CA INDEX NAME)

lee - 10 / 537677

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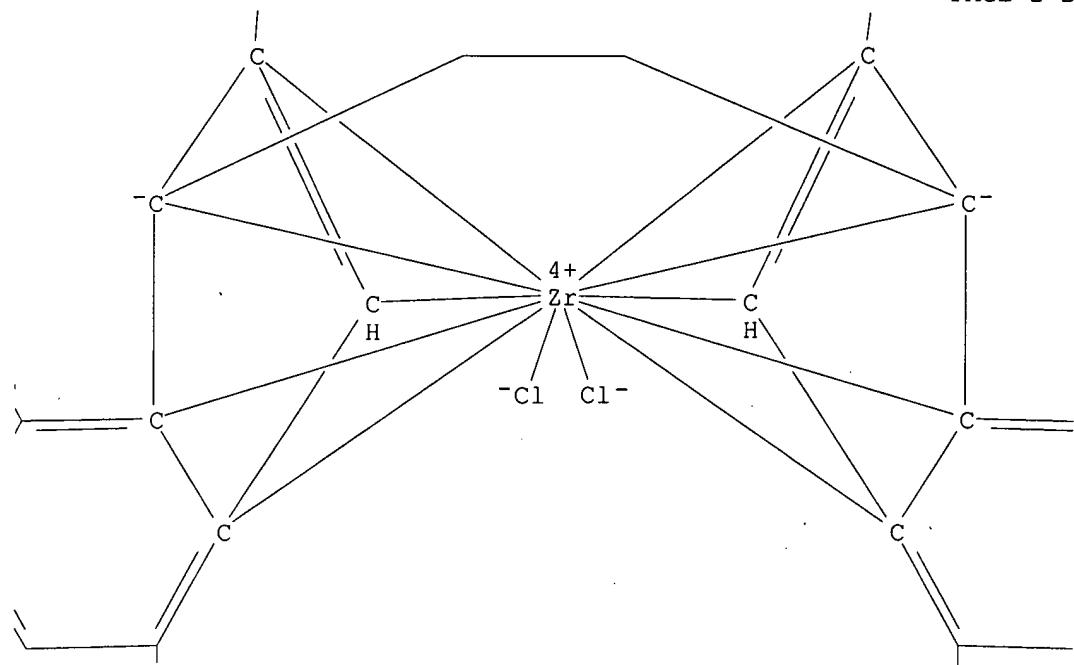
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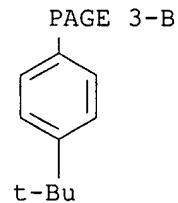
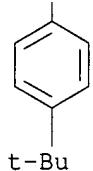


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PAGE 2-C





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STRUCTURE FILE UPDATES: 25 FEB 2007 HIGHEST RN 923060-60-0
DICTIONARY FILE UPDATES: 25 FEB 2007 HIGHEST RN 923060-60-0

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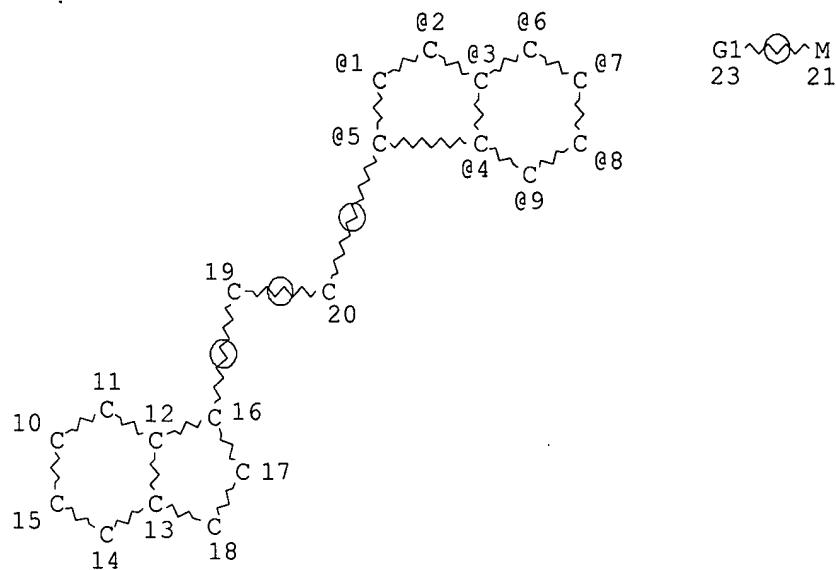
TSCA INFORMATION NOW CURRENT THROUGH June 30, 2006

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L24 STR



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DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

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NUMBER OF NODES IS 22

STEREO ATTRIBUTES: NONE

L26 2439 SEA FILE=REGISTRY SSS FUL L24

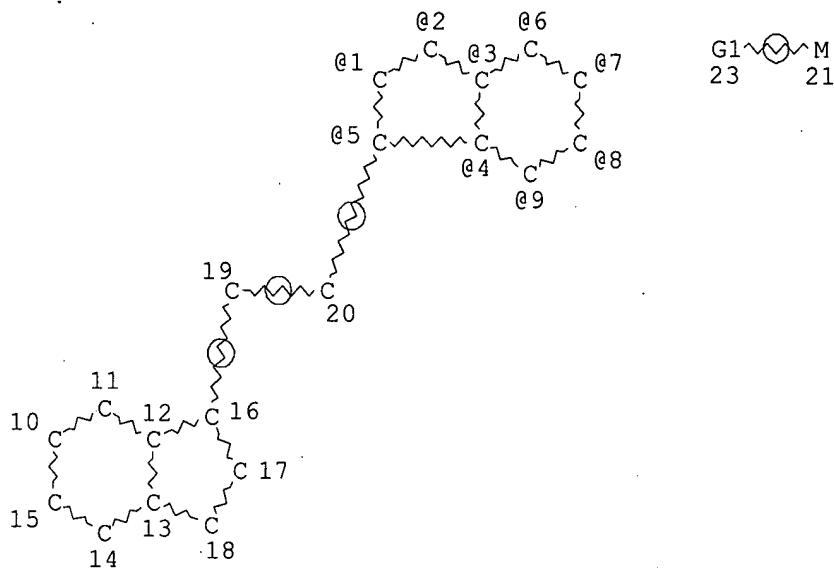
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2439 ANSWERS

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L24 STR



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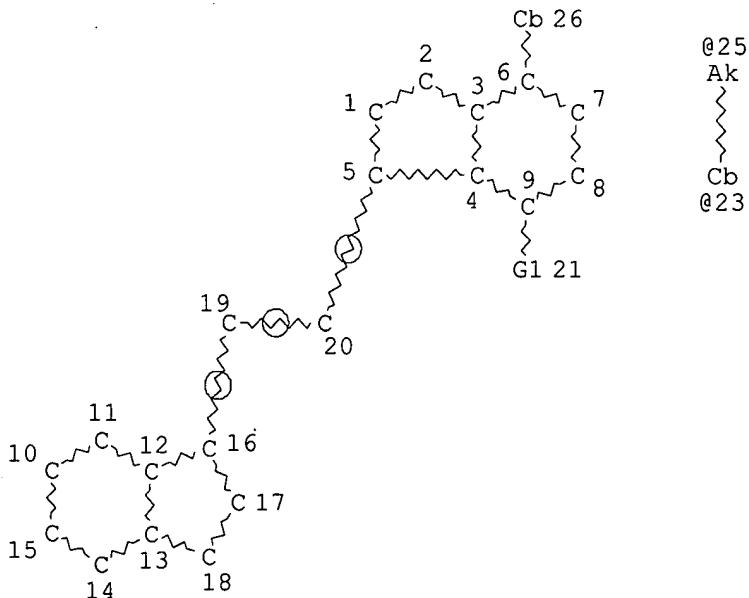
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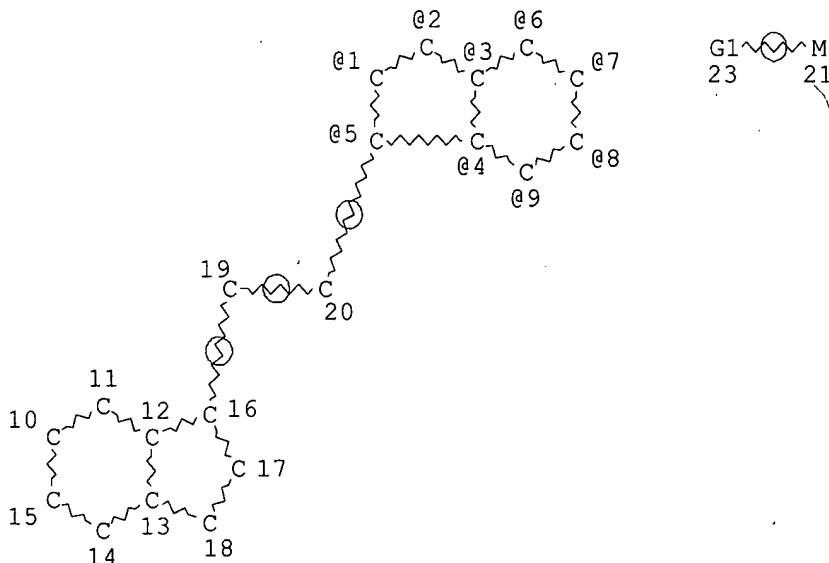
STEREO ATTRIBUTES: NONE

L46 102 SEA FILE=REGISTRY SUB=L26 SSS FUL L44

100.0% PROCESSED 2435 ITERATIONS
 SEARCH TIME: 00.00.01

102 ANSWERS

=> d sta que 150
 L24 STR



VAR G1=4/5/1/2/3/6/7/8/9

NODE ATTRIBUTES:

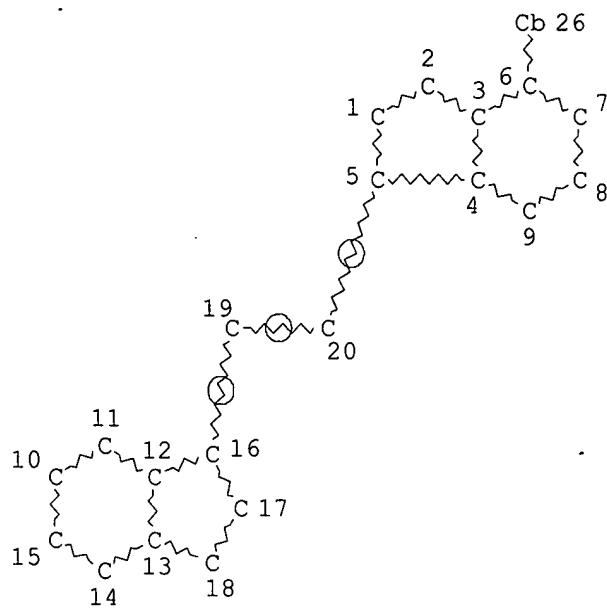
NSPEC IS R AT 21
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 22

STEREO ATTRIBUTES: NONE

L26 2439 SEA FILE=REGISTRY SSS FUL L24
 L49 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 21

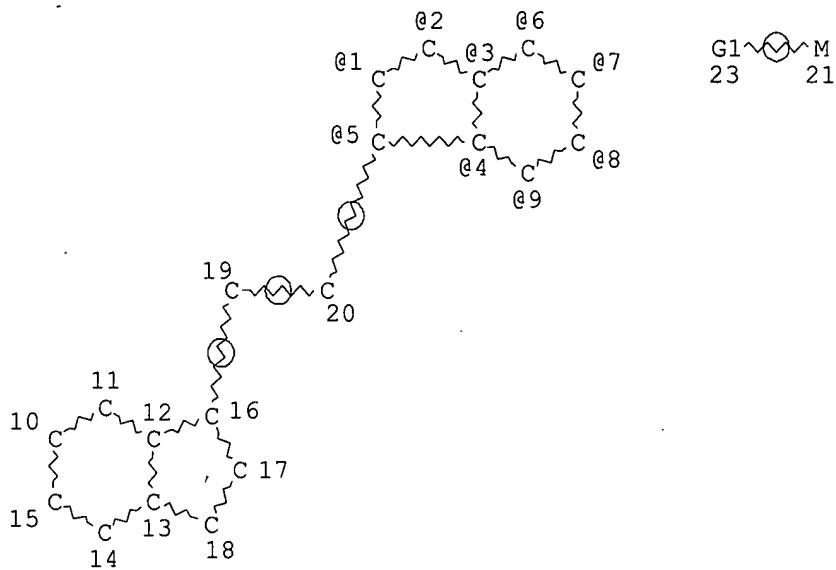
STEREO ATTRIBUTES: NONE

L50 144 SEA FILE=REGISTRY SUB=L26 SSS FUL L49

100.0% PROCESSED 2439 ITERATIONS
 SEARCH TIME: 00.00.01

144 ANSWERS

=> d sta que 157
 L24 STR



VAR G1=4/5/1/2/3/6/7/8/9

NODE ATTRIBUTES:

NSPEC IS R AT 21

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

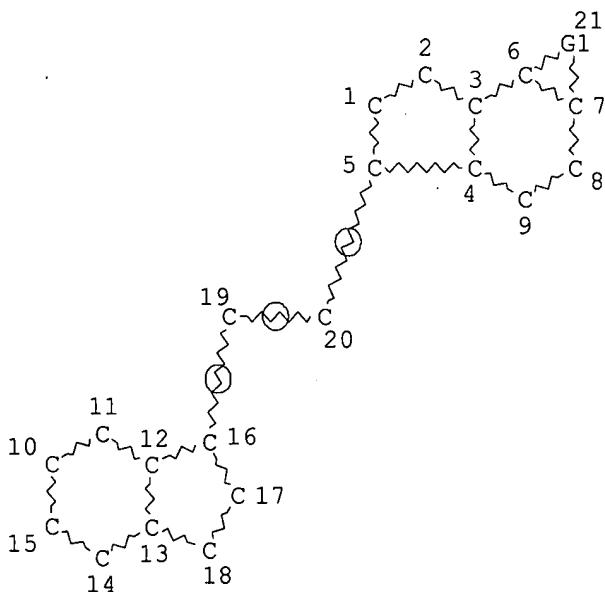
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 22

STEREO ATTRIBUTES: NONE

STEREO ATTRIBUTES: NONE
L26 2439 SEA FILE=REGISTRY SSS FUL L24
L52 STR



REP G1=(1-20) A

NODE ATTRIBUTES:

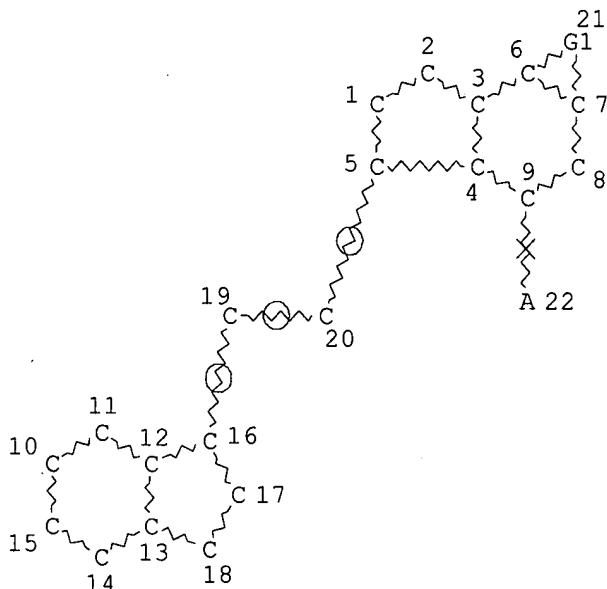
DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 21

STEREO ATTRIBUTES: NONE

L54 1299 SEA FILE=REGISTRY SUB=L26 SSS FUL L52
 L55 88 SEA FILE=REGISTRY ABB=ON PLU=ON L54 NOT ?FULLER?/CNS
 L56 STR



REP G1=(1-20) A

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 22

STEREO ATTRIBUTES: NONE

L57 73 SEA FILE=REGISTRY SUB=L55 SSS FUL L56

100.0% PROCESSED 86 ITERATIONS (72 INCOMPLETE) 73 ANSWERS
 SEARCH TIME: 00.00.12

=> d his

(FILE 'HOME' ENTERED AT 10:47:46 ON 26 FEB 2007)
 SET COST OFF

FILE 'HCAPLUS' ENTERED AT 10:47:54 ON 26 FEB 2007
 L1 2 S US20060122345/PN OR (US2005-537677# OR WO2003-EP13553 OR US20
 E SCHULTE/AU

L2 6 S E3
 E SCHULTE J/AU
 L3 144 S E3-E9,E32-E34,E44,E45
 E SCHOTTEK/AU
 L4 52 S E8-E10
 E OKUMURA/AU
 E OKUMURA Y/AU
 L5 202 S E3
 E OKUMURA YOSH/AU
 L6 17 S E19
 E OKUMURA NAME/AU
 L7 8 S E4
 E YOSHIKUNI/AU
 L8 1 S E26
 E BASELL/PA,CS
 L9 590 S E3,E4 OR BASELL?/PA,CS
 SEL RN L1

FILE 'REGISTRY' ENTERED AT 10:51:52 ON 26 FEB 2007
 L10 22 S E1-E22
 L11 2 S L10 AND C44H48CL2ZR

FILE 'HCAPLUS' ENTERED AT 10:54:01 ON 26 FEB 2007
 L12 971 S L2-L9 NOT L1

FILE 'HCAPLUS' ENTERED AT 10:54:08 ON 26 FEB 2007

FILE 'REGISTRY' ENTERED AT 10:54:11 ON 26 FEB 2007

FILE 'HCAPLUS' ENTERED AT 10:54:12 ON 26 FEB 2007
 L13 TRA L12 1- RN : 3958 TERMS

FILE 'REGISTRY' ENTERED AT 10:54:44 ON 26 FEB 2007
 L14 3958 SEA L13
 L15 1050 S L14 AND CCS/CI
 L16 994 S L15 AND NR>=4
 L17 750 S L16 AND ZR/ELS
 L18 STR
 L19 SCR 1918 OR 2049 OR 1988 OR 1923 OR 1984 OR 1983 OR 1925 OR 200
 L20 50 S L18 AND L19
 L21 STR L18
 L22 4 S L21
 L23 29 S L21 AND L19
 L24 STR L21
 L25 22 S L24
 L26 2439 S L24 FUL
 SAV TEMP L26 LEE537/A
 L27 2 S L10 AND L26
 L28 44 S L14 AND L26
 L29 46 S L27,L28
 L30 358 S L26 AND 29428.2.2/RID
 L31 111 S L26 AND 29428.2.1/RID
 L32 11 S L26 AND 67933.1/RID
 L33 16 S L26 AND 52968.1/RID
 L34 33 S L26 AND 29428.3/RID
 L35 49 S L26 AND 29428.1/RID
 L36 578 S L30-L35
 L37 569 S L26 AND 29428/RID
 L38 596 S L36,L37
 L39 15 S L26 AND 67933/RID

L40' 24 S L26 AND 52968/RID
L41' 608 S L38-L40
L42' 1831 S L26 NOT L29,L41
L43' 621 S L42 NOT ?FULLER?/CNS
L44' STR L24
L45' 5 S L44 SAM SUB=L26
L46' 102 S L44 FUL SUB=L26
SAV TEMP L46 LEE537A/A
L47' 1 S L46 NOT ?FULLER?/CNS
L48' 2 S L27,L47
L49' STR L44
L50' 144 S L49 FUL SUB=L26
SAV L50 LEE537B/A
L51' 42 S L50 NOT L46
L52' STR L49
L53' 50 S L52 SAM SUB=L26
L54' 1299 S L52 FUL SUB=L26
DEL LEE537B/A
SAV TEMP LEE537B/A L50
SAV TEMP L54 LEE537C/A
L55' 88 S L54 NOT ?FULLER?/CNS
L56' STR L52
L57' 73 S L56 FUL SUB=L55
SAV TEMP L57 LEE537D/A
L58' 1 S L57/COM
L59' 1 S L41 AND L46
L60' 25 S L41 AND L50
L61' 3 S L41 AND L54
L62' 24 S L60 NOT L48,L59

FILE 'HCAOLD' ENTERED AT 11:33:56 ON 26 FEB 2007
L63' 0 S L48

FILE 'HCAPLUS' ENTERED AT 11:33:58 ON 26 FEB 2007
L64' 2 S L48
L65' 2 S L64 AND L1-L9

FILE 'USPATFULL' ENTERED AT 11:34:10 ON 26 FEB 2007
L66' 1 S L48

FILE 'REGISTRY' ENTERED AT 11:34:24 ON 26 FEB 2007

FILE 'USPATFULL' ENTERED AT 11:34:32 ON 26 FEB 2007

FILE 'HCAPLUS' ENTERED AT 11:34:42 ON 26 FEB 2007

FILE 'REGISTRY' ENTERED AT 11:34:58 ON 26 FEB 2007

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